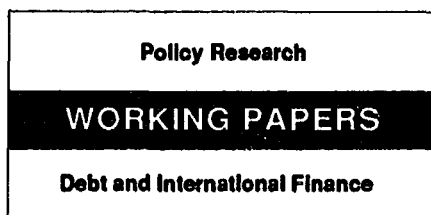


WPS 0917



International Economics Department
The World Bank
June 1992
WPS 917

Creditor Country Regulations and Commercial Bank Lending to Developing Countries

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The Bank for International Settlement's capital adequacy regulations may be somewhat less effective than they appear in accomplishing their main goal of controlling the overall riskiness of the international banking system. But they may be quite effective (probably unintentionally) in decreasing commercial bank lending to developing countries.

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This paper — a product of the Debt and International Finance Division, International Economics Department — is part of a larger effort in the department to analyze commercial bank lending to developing countries. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Karin Waelti, room N9-037, extension 37664 (June 1992, 37 pages).

Demirgüç-Kunt discusses the possible impact of creditor country regulatory developments on the asset choice and portfolio riskiness of commercial banks. She focuses particularly on the effect of the Bank for International Settlement's (BIS's) risk-related capital adequacy regulations and country risk provisioning practices.

She concludes that BIS regulations may be less effective than they appear on the surface in accomplishing their main goal — controlling overall riskiness of the international banking system — but quite effective (probably unintentionally) in decreasing commercial bank lending to developing countries.

She adds that mandated provisioning rules also deter increased bank lending to developing countries.

Risk-related capital adequacy requirements pose two main problems for developing country lending. First, by focusing on individual asset risk and assigning a high risk weight to assets with high return variance, the regulation skews banks' asset choices away from assets with high risk weights. To decrease the insolvency risk of banks, what should be controlled is the portfolio risk, not the choice of individual assets. Taking into account asset-return correlations, it is possible to construct low-risk portfolios that include loans to developing countries due to diversification benefits.

Second, the assigned risk weights do not measure asset risk properly. By assigning very broad risk weights, the regulation lumps together assets with very different risks. It is important to

realize that developing countries are not a homogeneous group. Not distinguishing countries in assigning risk weights unjustly punishes low-risk countries, possibly retarding improved access to financial markets. Also, by assigning a lower risk weight to developing country bank loans of short maturity, the regulation encourages creditor banks to lend short term. This may increase risks, especially if countries fund long-term projects by rolling over short-term loans.

One stated objective of BIS guidelines is to harmonize bank regulations across countries. This is largely true of capital and capital adequacy definitions. But for developing countries, loan loss reserves — especially mandated provisions — are also important, as they discourage lending. These provisioning practices still vary widely across countries and are slow to adjust to improvements in developing country performance.

At a time when commercial banks remain reluctant to lend to developing countries, BIS capital adequacy regulations, coupled with country risk provisioning practices, appear to reinforce this tendency.

An international risk rating committee could correct the biases against lending to developing countries by determining sufficiently detailed country risk weights, as well as a unified guideline for country provisions. This committee could also reflect improvements in country creditworthiness in their risk weights and could suggest provisioning levels in a timely manner so developing countries do not suffer unnecessarily.

The Policy Research Working Paper Series disseminates the findings of work under way in the Bank. An objective of the series is to get these findings out quickly, even if presentations are less than fully polished. The findings, interpretations, and conclusions in these papers do not necessarily represent official Bank policy.

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I would like to thank David Scott, Andrew Sheng, John Underwood and Dimitri Vitas for useful comments.

Creditor Country Regulations and Commercial Bank Lending to Developing Countries

I. Introduction

Ever since the debt crisis of 1982, commercial banks continue to be reluctant in lending to developing countries.¹ Aside from a few countries who have recently gained access to international capital markets, majority of the developing countries are not likely to receive significant new flows from commercial banks in the near future. The main reason for this pessimism is the fact that developing countries still need to improve their creditworthiness.

It is often argued that regulatory pressures on commercial banks have also contribute to the banks' reduced exposure to developing countries. This paper explores this possibility, focusing particularly on the effect of BIS risk-related capital adequacy regulations and different practices of country risk provisioning in major creditor countries. The main conclusion of the paper is that the BIS capital adequacy regulations may be somewhat less effective that they appear on the surface in accomplishing their main goal of controlling the overall riskiness of the international banking system, but that they may be quite effective (probably unintentionally) in decreasing the size of commercial banks' developing country loan portfolios. The paper also discusses that mandated provisioning rules against developing countries are an additional deterrent to increasing bank lending.

The paper is organized as follows. The next section discusses the issue of optimal bank capital and how regulation can impose a tax on the bank. Section 3 develops the rationale for capital adequacy regulation and reviews the literature on its effectiveness. Sections 4 and 5 illustrate how capital regulation and provisioning rules can affect lending to developing countries and discuss bank cost of capital in different creditor nations, respectively. Section 6 explains the BIS regulation, its

¹ In fact, commercial bank claims on developing countries have been declining. See World Bank, Debt and International Finance Division, Quarterly Review, September 1991 issue, Table 5.

treatment of developing country loans, and provisioning practices in different countries and discusses their negative impact on lending to developing countries. Section 7 discusses banks' reaction to BIS regulations, reviews empirical research in this area, and formulates testable hypotheses for future empirical work. The final section summarizes and concludes with recommendations.

II. Optimal Bank Capital and Regulation as a Tax

In the absence of bankruptcy costs, corporate income taxation, or other market imperfections, Modigliani and Miller (1958) have shown that in competitive capital markets the value of a firm is independent of its financial structure. However, for financial firms, the paradigm of perfect markets is difficult to defend. The existence of complete markets makes it difficult to explain the very existence of financial intermediaries. If markets were complete, lenders and borrowers could transact without intermediaries. Be it the asset transformation function, or the role of banks' liabilities as a medium of exchange, or the two-sided nature of the financial firm, in each case, the reason for the existence of banks involves some form of deviation from perfect market assumptions.² Accordingly, exploiting such imperfections, one can also derive an optimal debt-equity ratio for financial institutions.

In the literature, a financial institution is viewed as a microeconomic firm that attempts to maximize an objective function. The firm may be an expected value-maximizer or a risk-averse investor. The choice depends on specifying the agent behind bank decisions. If the agent is an equity investor, a risk-neutral value-maximizing objective function is selected such that the bank assures its investors efficient allocation without regard to the risk level that may be hedged elsewhere in their portfolio. However, if the agent is bank management, traditional corporate finance literature

² Santomero (1984) contains an excellent review of the literature on the question of why the institutional banking structure exists at all.

suggests a concave utility function due to management's inability to diversify human capital, i.e., the agent is a risk-averse expected utility maximizer. Yet another approach is to introduce bankruptcy costs, which leads the expected value maximizer to attach a negative value to the return variance due to the probability of bankruptcy, resulting in a concave utility function.

Using any of the objective functions, it is possible to obtain an optimal capital structure. Taggart and Greenbaum (1978) show that optimal capital structure for a value-maximizing firm can be obtained in the presence of excess loan revenues and transaction service profits. Orgler and Taggart (1983) extend this analysis to show that personal and corporate taxes, reserve requirements, and economies of scale influence banks' optimal capital structure. Kahane (1977) and Koehn and Santomero (1980) assume the bank is a risk averse expected utility maximizer to analyze the optimal bank capital issue. They optimize the bank's rate of return on capital by selecting a portfolio of assets and leverage position that optimizes shareholders' returns.

Why is the existence of optimal capital structure important? The existence of optimal capital represents a problem when the incentives are such that the optimal financial structure for an institution is one of no capital, in other words, maximum leverage. This happens because bank regulation, especially the mis-priced deposit insurance system, provides the banks with an incentive to increase risk and leverage. This change in incentive structure exposes the regulators to what is called moral hazard: the risk that insurance coverage leads insured parties deliberately to pursue risks that in an uninsured state they would not take. When a large portion of an institution's portfolio risk can be shifted to an insurer at the margin, riskier portfolios and additional leverage become attractive to the bank. Especially for market-value insolvent institutions, additional losses primarily accrue to the insurer. Once such a state is reached, bankers have no incentive to economize on their firm's risk taking. This is described as a "go-for-broke" mode (Guttentag and Herring, 1982). As capital of the institution decreases, its managers get hopelessly involved in inappropriate forms of risk-taking

in an effort to become profitable again. Whenever they win their go-for-broke gambles, their firm's solvency is restored. When they lose, the insurer picks up all but a small fraction of the bill.³

It is widely discussed in literature (Sharpe, 1978; Kareken and Wallace, 1978; Buser, Chen and Kane, 1981; Kane, 1985) that when deposit insurance underprices risk, banks will attempt to increase the value of insurance subsidy by increasing portfolio risk and leverage.⁴ As Buser, Chen and Kane (1981) discuss, receiving the benefits of insurance without having to pay the full cost explicitly, the institutions are forced to pay the implicit price of capital regulation, safety regulation, community development accountability, and the like. Therefore, regulation is a tax (Posner, 1971), that prevents the banks from attaining their optimal capital structure and portfolio composition.

III. Rationale and Effectiveness of Capital Adequacy Regulations

An institution's capital position determines the extent of potential losses it can take. In other words, a firm's capital is a measure of how much risk its owners stand ready to absorb. Thus, a higher capital-asset ratio, or lower leverage decreases the firm's risk exposure and the probability that it would fail. In banking, in the event of a failure, it is the deposit insurance system,⁵ not the insured depositors that stands to lose.

The idea that liability holders need to protect themselves from equity holders has been widely discussed in the corporate finance literature. (For example see Galai and Masulis, 1976.) To the

³ The recent U.S. Savings and Loan crisis is a good example of this behavior. See Kane (1989) for a discussion.

⁴ These problems may be alleviated by privatizing deposit insurance. See Kane (1992) for a discussion.

⁵ Even if a formal deposit insurance scheme does not exist, most countries have implicit deposit insurance, i.e., losses are covered by the general taxpayer and conservatively managed institutions able to survive the crisis. Actually even in cases where there is a formal deposit insurance scheme in place, the unfunded portion of the liabilities is generally covered by the government.

extent that debt holders can only monitor stockholders' actions imperfectly and ex post, modelling the equity of the firm as a call option on the firm's assets⁶ makes it clear that equity holders have an incentive to increase the risk of assets once debt has been issued or to issue additional debt. This is true because stockholders can increase the value of their equity call options by increasing the risk of the underlying assets of the firm or by issuing new debt. Covenants imposed by private debt holders, such as constraints on future debt issues, dividend payments and leverage, are to protect the bond holders from the limited liability stock holders.

In banking, deposit insurers replace the private bond holders. Merton (1977), Marcus and Shaked (1984), and Ronn and Verma (1986) have argued that mispriced deposit insurance results in a subsidy to bank stockholders similar to a put-option, the value of which also increases with bank risk.⁷ However, the ability of a bank's stockholders to maximize the value of their options by increasing risk depends on the preferences of the bank's managers⁸ and on the costs, constraints, and restrictions imposed on bank risk taking by regulators. These regulatory restrictions can be viewed as additional implicit deposit insurance premiums (Buser, Chen and Kane, 1981) or as similar to private bond covenants (Black, Miller, and Posner, 1978).

Capital regulation is a method of coinsurance. Higher capital levels require the bank to absorb greater losses in the event of failure and encourages safe and sound management practices. Because the better capitalized the banks are, the lower the probability of bank insolvency and losses suffered by the deposit insurer, regulators prefer more capital to less.

⁶ The equity holders have the option of buying back the firm from the debt holders at an exercise price equal to the face value of the debt instrument.

⁷ The stockholders have the right to sell the bank's assets to the deposit insurer at an exercise price equal to the face value of insured liabilities.

⁸ The risk taking incentives of bank managers will depend on the degree to which their best interests or preferences are tied to those of value-maximizing stockholders. This principal-agent problem is further discussed in Kane (1985) and Benston et al. (1986).

However, finance literature is divided on the issue of effectiveness of capital regulation. Kahane (1977) and Koehn and Santomero (1980) and later Gennotte and Pyle (1991) challenge the view that mere addition of capital to the bank's balance sheet reduces risk. Koehn and Santomero analyze the issue of bank portfolio reaction to more stringent capital requirements. They show that a utility maximizing, risk-averse bank-agent may reshuffle its portfolio and increase its asset risk to offset the effect of higher capital regulation, increasing the risk of bank failure. The extent of this reshuffling depends on the risk preference of individual banks. Relatively conservative institutions somewhat offset capital restrictions. However their more risky counterparts reshuffle their balance sheet to an even greater extent, increasing the total risk for the entire industry.

Keeley and Furlong (1988), however, show that for risk-neutral, value maximizing banks, more stringent capital regulation reduces the probability of bank failure and the risk exposure of the deposit insurer. This happens because the marginal value of the deposit insurance option with respect to increasing asset risk declines as leverage declines. Consequently, value-maximizing banks would have less of an incentive to increase asset risk as a result of more stringent capital regulation.

Although the theoretical debate is ongoing, and the results depend on the assumptions about the agent's objective function, the proposition that stringent capital regulation via a simple capital-asset ratio may give banks an incentive to increase their business risk by portfolio realignment have received substantial attention in regulatory circles. In other words, if regulation does not consider portfolio risk in determining capital requirements, it is possible that some banks may circumvent the intent of the regulation, increasing the overall risk of bankruptcy for the industry.

It is precisely this possible circumvention that led to risk-related capital regulation. Risk-related capital regulation is an attempt to take into account explicitly the quality of assets and off-balance-sheet exposure in calculation of a bank's required capital. Regulators determine a bank's unique capital requirement by examining its individual risk profile. This is done by imposing risk

weights that specify the minimum capitalization rates on assets. Banks engaging in more risky banking practices, including off-balance-sheet activities, are required to keep more capital.

Kim and Santomero (1988) argue risk-related capital regulation is potentially more effective if it employs optimally chosen weights. They derive "theoretically correct" risk weights that are independent of bank preferences. It is shown that the optimal risk weights depend on three factors: the expected returns; their variance-covariance structure; and the upper bound on the allowable insolvency risk, i.e., the maximum risk the insurer is willing to absorb. However, in practice risk weights are assigned arbitrarily.

The literature reviewed above discusses the possibility of an offsetting adjustment in portfolio risk, as a reaction to more stringent capital regulations. The issue of individual asset selection is not carefully evaluated. Flannery (1989) combines the option view of bank value maximization with concern for the determinants of bank portfolio composition. Individual asset riskiness influences the insurance put option's value because the bank's required capitalization varies with the level of low-quality loans detected in its portfolio. He shows that banks prefer relatively low-risk individual loans, even while they pursue high portfolio risk in order to maximize their deposit insurance put option value. Thus, a capital regulation that is related to individual asset risk, but not to overall portfolio risk, may alter banks' portfolio composition, but not necessarily decrease its riskiness. In other words, banks may hold less risky individual loans, yet increase overall portfolio risk by shuffling asset covariances (decreasing diversification benefits).⁹

⁹ An empirical test of this hypothesis would be to investigate whether after the BIS regulations international bank portfolios became less diversified (to increase portfolio risk) concentrating on low-risk-weight assets (to avoid capital regulation). Support for this argument would require (i) an increasing trend towards low-risk-weight assets in individual asset choice, and (ii) an increase in overall portfolio risk through manipulation of covariances (holding more of the same asset or assets with returns that have high positive correlation).

As elaborated on below, incorrect risk weights that reflect the emphasis on individual asset risk instead of portfolio risk may lead the capital regulation to be ineffective. Although not intended, risk-based capital regulation may be effective in dictating individual asset choices rather than decreasing bank riskiness and bankruptcy costs.

IV. The Effect of Bank Regulation on Lending to Developing Countries

Before discussing in detail the new developments in bank regulations, it is worthwhile to analyze how risk-weighted capital adequacy requirements and provisioning rules might affect lending to developing countries. In other words, how does \$1 of additional lending to a developing country affect a bank, i.e., what would be the costs resulting from such a decision?

Given that most of the large creditor banks currently meet their capital requirements, let us take an example of an imaginary U.S. bank, Bank Optimist, that has the required risk-weighted capital ratio of 8 percent, as given in Figure 1. For simplicity, the bank has only three types of assets: cash, OECD loans, and loans to developing countries, with risk weights 0, 0, and 1 respectively.

FIGURE 1
Bank Optimist Balance Sheet

Assets		Liabilities	
Cash	20	Deposits	210
OECD loans	100	LLR	2
LDC loans	100	RE+EQ	8
Total	220	Total	220
Risk Weights		Risk Weighted Assets	100
Cash	0	Risk Weighted Capital Ratio	8/100=8%
OECD loans	0		
LDC loans	1		

On the liability side, the bank has deposits, loan loss reserves (LLR), and capital made up of retained earnings (RE) and stockholder's equity (EQ). With risk-weighted assets of 100 million and capital of 8 million, Bank Optimist meets the capital adequacy ratio of 8 percent.

Now, let us assume the bank comes across a profitable investment opportunity and decides to make a loan of 10 million to a developing country, say Brazil. Then the bank's balance sheet would be as given in Figure 2.

FIGURE 2
Bank Optimist Balance Sheet after loan to Brazil

Assets		Liabilities	
Cash	10	Deposits	210
OECD loans	100	LLR	2
LDC loans	110	RE+EQ	8
Total	220	Total	220
Risk Weights		Risk Weighted Assets	110
Cash	0	Risk Weighted Capital Ratio	8/110=7.2%
OECD loans	0		
LDC loans	1		

Clearly, this additional loan due to its higher risk weight, increases the total risk weighted assets, and leads to a drop in the capital ratio of the bank to 7.2 percent, which is lower than the required ratio. Furthermore, since Bank Optimist is a U.S. bank, its managers will have to persuade the U.S. regulators that this loan is a much lower credit risk than other Brazilian loans, to avoid the 50 percent mandated provisioning requirement all Brazilian loans are subject to. If they cannot, this would mean a 5 million addition to LLR, which normally comes from retained earnings. As shown in Figure 3, this would decrease the capital ratio of Bank Optimist to around 3 percent.

FIGURE 3

Bank Optimist Balance Sheet after loan to Brazil and additional provisioning

Assets		Liabilities	
Cash	10	Deposits	210
OECD loans	100	LLR	7
LDC loans	110	RE+EQ	3
Total	220	Total	220
Risk Weights		Risk Weighted Assets	110
Cash	0	Risk Weighted Capital Ratio	3/110=2.7%
OECD loans	0		
LDC loans	1		

In order to avoid possible regulatory action, Bank Optimist has to get its capital adequacy ratio up to the required rate. One possibility is to cut back on other risky loans, another is to go to the equity market. If the bank sells a 10 million loan with equal risk weight (that requires 50 percent provisioning) for face value at the same time it makes the loan to Brazil, its balance sheet remains as in Figure 1. However, this is unlikely if the loan required 50 percent provisioning. If there were no mandated provisions for the loan, and it sells for face value, then the bank would still incur the provisioning costs on the Brazil loan.¹⁰ At any rate it may not be possible to arrange such an equally

¹⁰ Ignoring the provisioning costs, if this 10 million face value loan sells for 8 million, the two million differential required for the Brazil loan would come from cash, and will be written off from loan loss reserves. Then the bank size shrinks to 218 million, with adequate capital. However, if

offsetting transaction. Most probably, the bank will go to the equity market to raise 5.8 million of capital (so that $8.8/110=8\%$ again). The net risk-adjusted expected return from the Brazil investment should be high enough to offset the cost of this capital, otherwise a zero risk weight OECD loan may look much more attractive. Even if the bank has risk-taking incentives to maximize its subsidy from deposit insurance, it may do so by making low risk-weighted but concentrated loans, thus increasing the riskiness of its portfolio but avoiding capital costs. Keeping everything else constant, the decision may depend on the cost of capital, which would vary from bank to bank and across nations.

V. What Determines Cost of Capital?

The cost of capital is the pretax real return that a firm must earn to satisfy the demands of its shareholders and bondholders. If new projects do not earn a return at least as great as the cost of capital, the equity market will penalize managers for wasting corporate resources. Cost of capital for a corporation is a function of the real rates demanded by its bondholders and shareholders, the debt/equity mix in financing new projects, and corporate tax rates.

However, the cost of capital for banks differ from cost of capital for industrial firms in two respects. First, given deposit insurance, most debt is riskless and the required rate on deposits is the risk-free rate. Second, given that capital asset ratios are binding at the margin, the debt/equity mix required for a given project is already determined. Therefore, the cost of equity is the crucial factor, and a bank's cost of capital is largely determined by the value that stock market assigns to a bank's earnings and, to a lesser extent, by the risk premium paid on its subordinated debt.

Thus a bank's cost of capital for a financial product can be defined as the net spread between bank borrowing and lending rates that must be generated in order to maintain the market value of

there are provisioning requirements for the new loan, or if the loss realized on the sold loan is greater than the available loss provisions (in our case more than 2 million), the bank will still need to raise additional capital.

the bank. In the above example of the Bank Optimist, the expected return on the Brazilian loan will be equal to the bank's cost of capital if issuing the additional shares of equity does not lower the bank's share price in the market. For the share issuance not to lower the bank's share price, the return on the new equity devoted to the contemplated Brazil loan must be at least as great as the profit rate on the bank's existing equity. Of course the bank will incur expenses in making the loan. Therefore in estimating the required return on the Brazilian loan Bank Optimist should deduct labor costs, physical capital costs, expected default losses and other expenses.

Cost of capital varies across nations due to differences in national saving behavior, macroeconomic stabilization policies, industrial organization, financial policies, official safety nets, and taxes. Zimmer and McCauley (1991) conduct a cross country comparison of bank cost of capital for the period 1984-1990. Their analysis reveals that Japanese banks have the lowest and least variable cost of capital (The cost of capital was 3 percent for the period). German banks follow with a moderate cost of capital (at 5 to 7 percent), whereas U.S., U.K. and Canadian banks face a high cost of capital (of around 10 percent). Based on these results, had our Bank Optimist been a Japanese bank, a much lower required return on the Brazilian investment would have been sufficient for the loan. This is not only because of lower capital costs in Japan but also because of the difference in Japanese provisioning practices, which would recommend a smaller addition to loan loss reserves.

The above example helps clarify how international risk-weighted capital regulation and differences in national loan loss provisioning requirements may discourage banks from lending to developing countries. However BIS risk weights do not discriminate against all types of developing country lending (since lending to private sector, government and banks are treated differently) and not all creditor countries have mandated provisioning rules. The next section summarizes and discusses relevant bank regulations both at the international and national levels.

VI. National vs. International Bank Regulations

The different regulatory, accounting and tax environments of creditor banks started gaining importance with the collapse of the concerted approach to restructuring developing country debt. Efforts to design menus of financial instruments tailored to different needs of creditor banks, focused interest on the complexity and diversity of the regulatory environments these institutions operate in. However, in late 1980s, a unifying trend that seeks to eliminate discrepancies among different domestic bank regulations has started.

In July 1988, the Basle Committee on Banking Regulations and Supervision Practices, which is made up of bank regulatory agencies from 12 industrialized nations,¹¹ reached an agreement on a framework for measuring capital adequacy and setting minimum standards for international banks. This agreement aims to limit the insolvency risk of the international banking system and to diminish the differences in international bank supervisory practices.¹²

A. BIS Capital Adequacy Regulations

The BIS regulation sets a minimum ratio of capital to risk-weighted assets at 8 percent to be achieved by April 1993. On-balance-sheet assets are assigned to categories, each having a different relative risk weight, ranging from 0 to 100 percent. Off-balance-sheet exposures are also included in risk-weighted assets.

In addition, definition of "capital" is clarified. Capital is classified into two categories: "core" or "Tier 1" capital and "supplementary" or "Tier 2" capital. Tier 1 capital consists of equity capital (common stock and noncumulative perpetual preferred stock) and general reserves from post-tax retained earnings. Tier 2 capital consists of undisclosed reserves, revaluation reserves, general loan

¹¹ Belgium, Canada, France, Germany, Italy, Japan, Netherlands, Sweden, United Kingdom, United States, Switzerland, and Luxemburg.

¹² Report of the Committee on Banking Regulations and Supervisory Practices, "International Convergence of Capital Measurement and Capital Standards."

loss reserves, hybrid debt capital instruments (such as long term preferred stock and perpetual debt instruments) and subordinated debt. Total Tier 2 capital is limited to 100 percent of core capital. Loan loss reserves can be included in Tier 2 capital only up to 1.25 percent of risky assets, and subordinated debt with a minimum maturity of five years may be included up to a limit of 50 percent of core capital. Goodwill is deducted from Tier 1 capital and investments in subsidiaries engaged in banking and financial activities that are not consolidated in the national system are deducted from total capital. The minimum capital level, K, required under the regulation is then defined as:

$$K = k(0.0 \times C1 + 0.1 \times C2 + 0.2 \times C3 + 0.5 \times C4 + 1.0 \times C5 + \text{OBS}),$$

where k is .04 for Tier 1 capital and .08 for total Tier 1 plus Tier 2 capital. C1-C5 are categories of assets multiplied by their respective risk weights. OBS is the total converted off-balance-sheet exposure. (Each category of off-balance-sheet items also has a different conversion factor.) One of the most important features that distinguish this regulation from earlier capital adequacy regulations is that it assigns unequal weights to different asset categories. Risk weights by category are summarized in Table 1.

(i) The Treatment of Developing Country Loans in Determination of Adequate Capital

How does the BIS capital regulation treat developing country loans of international banks? The differences of treatment among loans to OECD countries and developing countries are summarized below:

Central Governments and Central Banks: Claims on OECD central governments and central banks, in addition to claims collateralized by their securities or guaranteed by them, receive the lowest risk weight at 0 percent. Claims on central banks and central governments outside OECD, and claims collateralized by their securities or guaranteed by them receive the highest risk weight at 100 percent unless they are denominated and funded in national currency. Then they are also given the lowest risk weight.

Public Sector Entities: All claims on public sector entities (entities that are non-government and not guaranteed by the government) are treated equally if they are domestic. Risk weight can be 0, 10, 20, or 50 percent at national discretion. Claims on nondomestic OECD public sector entities receive a 20 percent risk weight whereas those of non-OECD countries receive a 100 percent weight.

Commercial Banks: Claims on banks incorporated in the OECD and loans guaranteed by them receive a 20 percent risk weight. Banks incorporated outside the OECD receive the same treatment only for loans with a residual maturity of up to one year. Otherwise, they are assigned the highest risk weight of 100 percent.

Private Sector: All claims on private sector are assigned the highest risk weight regardless of country. (Residential property secured mortgage loans occupied or rented by the borrower are assigned 50 percent risk weight.)

B. National Bank Regulations

International capital regulations is an important step in unifying bank regulations accross countries. However there still exists differences in national bank regulations. Especially, as we have seen in the example of the Bank Optimist above, loan loss reserve requirements can play an important role in affecting lending to developing countries. Banks in different countries are still subject to different tax and regulatory treatment of loan loss reserves (LLRs). Prior to BIS regulations LLRs inclusion in regulatory capital and tax deductibility varied widely across countries leading to different levels of reserves and different incentives to recognize losses. According to BIS guidelines, however, general (for unidentified losses) LLRs in excess of 1.5 percent of risk-weighted assets are excluded from capital, and specific (for identified losses) LLRs are not included at all. This unifies capital inclusion of LLRs to a large extent although not completely, since some countries allow only specific LLRs against country risk whereas others allow both general and specific provisions. Leaving these differences and differences in tax treatments aside, provisioning will have

approximately the same regulatory consequence for all banks in terms of capital adequacy. However, there are still differences in mandated provisioning rules and their inclusion capital. To the extent some countries mandate provisions, banks subject to such regulations will face greater costs.

Differences in tax treatment of provisions are less important since they ultimately prove to be differences in timing. If the LLRs are not tax deductible and losses are realized on the portfolio, banks share their losses with their governments; if the loans provided against ultimately perform, additional income will be recognized and taxes will be paid. The time value of early deductibility of potential loan losses is not trivial and to a certain extent may account for differences in provisioning levels; however differences in tax treatments are generally overstated. The different treatment of LLRs in major creditor countries is discussed in the Annex. The main differences are also summarized in Table 2 and provisions recommended/required for U.K. and U.S. banks are given in Table 3.

C. Criticisms of International and National Bank Regulations

One of the important criticisms of the international capital regulation is that it does not fulfill its main goal of decreasing the insolvency risk of the international banking system. As stressed throughout the paper, emphasizing individual asset risk but not portfolio risk may actually be rendering the risk-related capital regulation ineffective.

Assigning high risk weights to developing country loans may make the banks reallocate their portfolios and eliminate these loans. However, developing country loans can be used to hedge the portfolios and decrease the overall riskiness of the portfolios since their returns may be negatively correlated with other assets. Because of the emphasis on individual asset risk rather than portfolio risk, highly diversified loan portfolios are treated the same as concentrated loan portfolios even though the latter portfolio has greater risk of unexpected default losses. In other words, the covariances among risks are not directly included, so that riskier speculative loan portfolios may end

up having the lower capital requirements than lower-risk hedged portfolios. For example, a bank with a loan to a government oil company in an OECD country and a loan to the Phillipines government may have a lower overall portfolio risk than a bank with oil and mortgage loans. However, since the capital requirement does not consider covariances, the bank with the Phillipines loan would be subject to a higher required capital.

The rather arbitrary choice of risk weights may not necessarily reflect the true risks inherent in these different activities. Optimal risk weights should incorporate how addition of an asset to a portfolio increases the risk of the portfolio. Thus the regulation focuses on asset variances, ignoring the covariances. However, these variances are not measured properly either. The risk categories are very broad and include items with quite different risks. No distinction is made between loans to highly creditworthy borrowers and loans to borrowers with little credit history or collateral. Moreover, other risks such as interest rate risk, foreign exchange risk, affiliated institution risk, and position risk in traded equity securities are ignored. Furthermore, regulation relies on book-value accounting. Under book-value accounting, assets and liabilities are recorded at historical cost, and capital is not adjusted for subsequent changes in their true market values. As a result, book capital can understate or overstate a bank's cushion against unexpected losses.

For developing countries, the differential treatment they receive from the new capital guidelines is important in their renewed access to commercial bank lending. Two problems exist. First, the capital regulation lumps governments into two broad categories. All non-OECD governments are assigned the highest risk regardless of the differences in their creditworthiness. However, clearly all developing countries do not pose the same credit risk, and this classification punishes certain countries unnecessarily. In order to circumvent this restriction countries that are able to borrow in their own currency (countries that are creditworthy) may do so. Nevertheless for countries that are not as creditworthy but improving, this restriction remains.

Second, for claims on banks, the different treatment of short-term and long-term maturity instruments introduces an additional bias. Developing countries that are establishing access to markets may attempt to fund long-term projects by borrowing and rolling over short-term loans.¹³ Given the lower capital requirement, banks may be willing to accept this. However, past experience suggests that this practice may create a very unstable condition for the borrowing country.

What is unfortunate is that the move away from developing country loans, or any other high risk-weighted loans for that matter, is an unintended impact of the regulation, since this move does not necessarily decrease portfolio risk. This problem may be alleviated through better definition of risk weights.

Finally, although BIS guidelines are an important move towards unifying bank regulations, much more effort is needed to fully achieve this goal. As discussed above, even though the BIS regulations has to a certain extent unified the definition and levels of capital adequacy, there remains important differences among reserving practices and requirements. For example U.S., France, and Canada mandate provisions, of differing levels (see Tables 2 and 3) whereas Japan and U.K. only have recommended provisions. Germany, on the other hand, has neither mandated or suggested provisioning levels. While in some countries such as Japan, U.K. and Germany country-risk provisions can be only specific and cannot be included in capital, U.S. and Canada allow general provisions that are included in capital up to 1.25 percent of risk-weighted assets. Generally, mandated provisions are always specific and not included in capital. However, France treats its mandated country-specific provisions as "general" in the sense that they are still included in capital up to the internationally negotiated limit.

¹³ Recent Bank of England and OECD statistics show that the average maturity of bank loans has indeed shortened.

One obvious impact of mandated provisioning rules for developing country lending is that they clearly discourage new lending since in most cases new loans would require increases in provision levels and would have capital and possibly regulatory costs. Given that most creditor countries are very slow to adjust their required provisioning matrixes to reflect improvements in creditworthiness condition of countries, and since it is very difficult to reverse provisioning on existing loans, these provisioning requirements may be an additional preventive factor in increasing bank lending to developing countries in the future.

The general trend toward unification in banking practices may eventually lead to the rise of an International Country Risk Evaluation Committee which would be in a position to not only determine risk-weights reflecting the creditworthiness of countries, but also international provisioning guidelines corresponding to these risk weights.

VII Reaction to BIS Regulations: Empirical Evidence

The agreement on risk-related capital adequacy regulation had a significant impact on bank balance sheets. Initially, in 1988 and less so in 1989, international banks replenished their capital through retained earnings, and the raising of equity. However, with the weakening of equity markets in 1990, and declining bank profitability due to nonperforming assets, banks started to limit asset growth. Particularly assets carrying high risk weights were reduced. In addition, more emphasis was placed on risk-sensitive pricing, which reflected in higher margins on corporate loans.

In 1991, capital adequacy ratios of major banks already meet the BIS requirements. Table 4 and 5 present capital adequacy ratios of two major developing country creditor groups: the U.S. and Japanese banks. The improvement in capital ratios of U.S. money center banks was achieved through decreasing the high-risk-weight assets such as developing country and real estate loans. Money center banks' average risk-weighted capital ratio increased to 10.78 percent at the end of the third quarter,

up from 10.17 percent at the end of first quarter. Japanese city banks' capital ratios increased to 8.58 percent at the end of the third quarter, from 8.32 percent at the end of first quarter. This increase is attributed to an increase in the amount of subordinated debt raised and the rise in the stock and bond markets.

There are also empirical studies that investigate the impact of BIS regulations on international banks. Avery and Berger (1991) show that the impact of the new capital standards would be to shift the burden of capital requirements substantially onto larger banks. They argue that for those banks cost of compliance with the new capital requirements will be lower than the cost of raising additional capital. In other words, in some cases the cost of making portfolio adjustments to reduce required capital - such as substituting lower risk category assets for higher risk category assets, selling assets, or reducing off-balance-sheet activities - is less costly than raising additional capital. They conclude that quite a few U.S. banks will be able to meet the new capital requirements in large part or in full by making on-balance-sheet portfolio changes.

Market's assessment of how large international banks in the U.S., Canada, U.K., and Japan were affected by the BIS regulations is studied by Cooper, Kolari and Wagster (1991). The main conclusion that can be drawn from their empirical findings is that investors perceived that U.S., Canadian, and British banks would be adversely affected by the new capital rules, with U.S. banks exhibiting the largest negative reaction of these countries. In the case of Japanese banks, there is mixed evidence concerning the perceived effect of the new capital rules. The authors interpret this result as reflecting the uncertainty among investors with respect to the handling of hidden reserves under the new guidelines.

Pettway, Kaneko, and Young (1991) study the impact of security sales by Japanese banks in response to higher levels of capital required under the BIS regulations. They find that Japanese stockholders were not significantly affected by the new equity sales. This result for the Japanese

banks is different from the results that would be expected from many finance theories and from the results of equity sales by U.S banks as they have significant negative abnormal returns. Keeley (1989), studying the impact of stock sales by capital-sufficient and capital deficient U.S. banks during 1975-86, found that abnormal returns of capital sufficient banks were insignificant at the announcement date. Pettway et al. observe that their results for Japanese banks support the conclusion of Kane, Unal and Demirgüç-Kunt (1990) who argue that adjusting for their hidden capital, Japanese banks are capital sufficient since their true market capitalization is much higher than their book or regulatory capital levels.

Findings of the above empirical studies indicate that most banks are affected negatively by the BIS regulations (except for Japanese banks) and that it might be less costly (at least for U.S. banks) for them to reshuffle portfolios rather than raise additional equity.

It would also be interesting to investigate how developing countries are affected by the BIS guidelines. One way of doing this would be through examining detailed bank balance sheet and price information. Analyzing this data it would be possible to find out whether the imposed risk-weights lead to a portfolio reshuffling, a simple downsizing of the high-risk-weighted assets, or to no change in the portfolios. Earlier theoretical research in this area predicts banks would move towards low-risk-weight assets (away from developing country loans) with greater positive correlation in their returns, resulting in a possible increase in their overall portfolio risk. One obvious way of doing this would be to have portfolios highly concentrated (lending to affiliated institutions would be a way to circumvent limits on concentration) in assets with lower risk-weights. An empirical examination of bank portfolios would indicate (i) the success of the regulation in controlling bank portfolio risk (ii) the effect of the regulation on individual asset choice. Another approach would be to analyze the impact of BIS regulations on developing country stock markets and secondary market debt prices. These however, are beyond the scope of present paper and are left for future research.

VIII. Summary and Conclusions

This paper discusses the possible effect of national and international bank regulations on bank asset choices and portfolio riskiness, with a particular emphasis on their effect on commercial bank lending to developing countries. At a time when commercial banks remain reluctant to lend to developing countries, BIS capital adequacy regulations coupled with country risk provisioning practices appear to reinforce this tendency.

Concerning developing country lending, there are two main problems with the risk-related capital adequacy requirements. First, the regulation restricts individual asset risk rather than portfolio risk. Second, the assigned risk weights do not measure asset risk properly.

The first problem is a conceptual one in that the regulation focuses on individual asset risk rather than the more appropriate portfolio risk. By focusing on individual asset risk and assigning a high risk-weight to assets with high return variance (which is done imperfectly), the regulation restricts banks' asset choice, away from those assets with high risk weights, including developing country loans. However, to decrease the insolvency risk of banks, what is meant to be controlled is the portfolio risk, not the choice of individual assets. As argued above, it is possible to hold relatively low-risk individual loans and at the same time increase portfolio risk. Therefore, to be effective the risk-related capital requirement should be based on portfolio-risk, rather than individual asset-risk. This more appropriate approach would not necessarily discourage banks from lending to developing countries. Taking into account asset-return correlations, it is possible to construct low-risk portfolios that include developing country loans, due to diversification benefits. Thus, hedged portfolios including developing country loans could be subject to lower capital requirements than riskier portfolios that exclude developing country loans all together. Of course, the problem with this approach is the difficulty of its application in practice. These problems lead academicians to question

the effectiveness of capital regulation in the first place.

However, at least the unintended effects of the regulation (discouraging lending to all developing countries, for example) can be minimized by being more careful about the risk weights. By assigning very broad risk weights the regulation lumps together assets with very different risks. It is important to realize that developing countries are not a homogenous group. Countries that are reestablishing market access constitute a much better credit risk than others. Not distinguishing between countries in assigning risk weights unjustly punishes these countries, possibly retarding their progress in renewing their market access. In addition, by assigning a lower risk weight to developing country bank loans of short maturity (up to one year), the regulation gives incentive to banks to provide short term loans. If countries attempt to fund long-term projects by borrowing and rolling over short-term loans, this may lead to a very destabilizing situation. Therefore, a revision of the risk weights addressing these issues would be helpful in correcting the biases.

It is also argued that one of the objectives of the BIS guidelines is to harmonize bank regulations across countries. To a large extent BIS guidelines provide a uniform definition of capital and capital adequacy. However, for developing countries, loan loss reserves, especially mandated provisions are important since they discourage lending. These provisioning practices still vary widely across countries, and are slow to adjust to improvements in developing country performance.

Determination of sufficiently detailed country risk weights, as well as a unified guideline for country provisions, could be performed by an international risk rating committee. This committee could try to reflect improvements in country creditworthiness in their risk weights and corresponding suggested provisioning levels, in a timely fashion such that the progress of developing countries does not suffer unnecessarily due to lack of financing resulting from inadequate information. In other words, this committee would perform the job of a credit rating agency, correcting the biases and increasing the efficiency of the market.

References

- Avery, R. and A. Berger. 1991. Risk-based Capital and Deposit Insurance Reform. *Journal of Banking and Finance*. 15, 847-74.
- Bank of International Settlements. 1988. International Convergence of Capital Measurement and Capital Standards. Report of the Committee on Banking Regulations and Supervisory Practices. Basle.
- Benston, G., Eisenbeis, R., Horvitz, P., Kane, E., and G. Kaufman. 1986. *Perspectives on Safe and Sound Banking*. Cambridge, MA: MIT Press.
- Black, F., M. Miller and R. Posner. 1978. An Approach to the Regulation of Bank Holding Companies. *Journal of Business*. 51, 379-412.
- Buser, S., A. Chen, and E. Kane. 1981. Federal Deposit Insurance, Regulatory Policy, and Optimal Bank Capital. *Journal of Finance*. 35, 1, 51-60.
- Cooper, K., J. Kolari, and J. Wagster. 1991. A Note on the Stock Market Effects of the Adoption of Risk-Based Capital Requirements on International Banks in Different Countries. *Journal of Banking and Finance*. 15, 367-381.
- Flannery, M. 1989. Capital Regulation and Insured Banks' Choice of Individual Loan Default Risks. *Journal of Monetary Economics*. 24, 235-258.
- Galai, D. and R. Masulis. 1976. The Option Pricing Model and the Risk Factor of Stock. *Journal of Financial Economics*. 3, 53-81.
- Gennotte, G. and D. Pyle. 1991. Capital Controls and Bank Risk. *Journal of Banking and Finance*. 15, 805-824.
- Guttentag, J. and R. Herring. 1982. Insolvency of Financial Institutions: Assessment and Regulatory Disposition. In Paul Wachtel ed. *Crisis in the Economic and Financial Structure*. Lexington, Mass.: Lexington Books. 99-126.
- Hay, J. and N. Paul. 1991. Regulation and Taxation of Commercial Banks during the International Debt Crisis. World Bank Technical Paper No. 158.
- Kahane, Y. 1977. Capital Adequacy and the Regulation of Financial Intermediaries. *Journal of Banking and Finance*. No. 1, 207-18.
- Kane, E. 1985. *The Gathering Crisis an Federal Deposit Insurance*. Cambridge, MA: MIT Press.
- Kane, E. 1989. *The S&L Insurance Mess: How Did It Happen?* Washington, D.C: The Urban Institute Press.

Kane, E. 1992. Privatizing Proactive Loss-Control Decisions in Credit Union Deposit Insurance. Manuscript. The Ohio State University.

Kane, E., H. Unal and A. Demirgüç-Kunt. 1990. Capital Positions of Japanese Banks. In S.G. Rhee and R.P. Chang ed. *Pacific-Basin Capital Markets Research Volume II*. New York, NY: Elsevier Science Publishers B.V. 125-141.

Kareken, J. and N. Wallace. 1978. Deposit Insurance and Bank Regulation: A Partial Equilibrium Exposition. *Journal of Business*. 51, 3.

Keeley, M. 1989. The Stock Price Effects of Bank Holding Company Securities Issuance. *Economic Review*. Federal Reserve Bank of San Francisco, Winter, 3-19.

Keeley, M. and F. Furlong. 1988. A Reexamination of Mean-Variance Analysis of Bank Capital Regulation. Mimeo, Federal Reserve Bank of San Francisco.

Kim, D. and A. Santomero. 1988. Risk in Banking and Capital Regulation. *Journal of Finance*. 43, no. 5, 1219-33.

Koehn, M. and A. Santomero. 1980. Regulation of Bank Capital and Portfolio Risk. *Journal of Finance*. 35, no. 5, 1235-44.

Marcus, A. and I. Shaked. 1984. The Valuation of FDIC Deposit Insurance Using Option Pricing Estimates. *Journal of Money Credit and Banking*. 20, 446-60.

Merton, R. 1977. An Analytic Derivation of the Cost of Deposit Insurance Loan Guarantees: An Application of Modern Option Pricing Theory. *Journal of Banking and Finance*. 1, 3-11.

Modigliani, M. and M. Miller. 1958. The Cost of capital, Corporation Finance and the Theory of Investment. *American Economic Review*. 48, 261-97.

Orgler, Y. and R. Taggart, Jr. 1983. Implications of Corporate Capital Structure Theory for Banking Institutions. *Journal of Money, Credit, and Banking*. Vol. 15, no. 2, 212-21.

Pettway, R., T. Kaneko and M. Young. 1991. International Bank Capital Standards and the Costs of Issuing Capital Securities by Japanese Banks. *Journal of Banking and Finance*. 15, 559-580.

Posner, R. 1971. Taxation by Regulation. *Bell Journal of Economics and Management Science*. 1. 22-50.

Ronn, E. and A. Verma. 1986. Pricing Risk-Adjusted Deposit Insurance: An Option-Based Model. *Journal of Finance*. 41, 871-95.

Santomero, A. 1984. Modeling the Banking Firm: A Survey. *Journal of Money, Credit, and Banking*. Vol. 16, no.4, 576-602.

Sharpe, W. 1978. Bank Capital Adequacy, Deposit Insurance and Security Values. *Journal of Financial and Quantitative Analysis*. 13, 701-18.

Taggart, R. Jr. and S. Greenbaum. 1978. Bank Capital and Public Regulation. *Journal of Money, Credit, and Banking*. Vol. 10, no. 2, 158-169.

World Bank, Debt and International Finance Division. 1991. *Quarterly Review, Financial Flows to Developing Countries*. September.

Zimmer, A. and R. McCauley. 1991. *Federal Reserve Bank of New York Quarterly Review*. 15, No. 3-4, 33-59.

Table 1. Risk Weights of On-Balance-Sheet Assets

<p><u>Category 1: 0% weight</u></p> <ul style="list-style-type: none"> * Cash (includes gold bullion). * Claims on central governments and central banks denominated and funded in national currency. * Other claims on OECD central governments and central banks. * Claims collateralized by cash or OECD central government securities or guaranteed by OECD central governments.
<p><u>Category 2: 0%, 10%, 20%, or 50% weight at national discretion</u></p> <ul style="list-style-type: none"> * Claims on domestic public sector entities, excluding central government and loans guaranteed by such entities.
<p><u>Category 3: 20% weight</u></p> <ul style="list-style-type: none"> * Claims on multilateral development banks (IBRD, IABD, AsDB, AfDB, EIB) and claims guaranteed by or collateralized by securities issued by such banks. * Claims on banks incorporated in the OECD and loans guaranteed by OECD incorporated banks. * Claims on banks incorporated outside the OECD with a residual maturity of up to one year and loans with a residual maturity of up to one year guaranteed by banks incorporated in countries outside the OECD. * Claims on nondomestic OECD public sector entities, excluding central government, and loans guaranteed by such entities. * Cash items in the process of collection.
<p><u>Category 4: 50% weight</u></p> <ul style="list-style-type: none"> * Loans fully secured by mortgage on residential property that is or will be occupied by the borrower or that is rented.
<p><u>Category 5: 100% weight</u></p> <ul style="list-style-type: none"> * Claims on private sector. * Claims on banks incorporated outside the OECD with a residual maturity of over one year. * Claims on central governments outside the OECD (unless denominated and funded in national currency). * Claims on commercial companies owned by the public sector. * Premises, plant and equipment and other fixed assets. * Real estate and other investments (including nonconsolidated investment in other companies). * Capital instruments issued by other banks (unless deducted from capital). * All other assets.

Table 2. Treatment of Country-Risk Loan Loss Reserves Across Creditor Countries

Country	Reserve Level ¹	Mandated Provision Levels	Allowable provisions for country risk	Capital inclusion of country provisions	
				Before BIS	After BIS
U.S.	60% average, 50-55% mon. cent., 70-75% regional.	Mandated percentages vary from country to country based on risk assessment by Federal Regulators. ²	specific or general	specific no general yes	specific no general up to 1.25% of weighted assets
Japan	40%	No mandatory requirements. Only a list of countries with recommended provision levels of 40%.	specific	yes	no
U.K.	67% 4 largest	No mandatory requirements, but a matrix of recommended percentage ranges that varies from country to country. ²	specific	no	no
France	60% 3 largest	Mandated provisions for a list of countries (not publicly available) based on past industry averages for each country.	specific but treated as general	yes	up to 1.25% (temporarily 2%) of weighted assets.
Germany	60% 3 largest	No mandated or suggested provisions.	specific	no	no
Canada	72%	Mandated provisions of minimum 35% for the overall portfolio. Allocation to each country is left to banks.	specific or general	no	specific no general up to 1.25% of weighted assets.

Notes: ¹All data are as of end-December 1990 except for Japan which is as of end-March 1991. Reserve levels are given as percentage of developing country exposure. Source: World Bank Quarterly Review, September 1991.

Generally all specific provisions are tax deductible. Japan, France, and Canada also allow general

provisions to be deducted from capital whereas others do not.

²Provisions required/recommended for selected country loans are given in Table 3.

Table 3. Provisions Required/Recommended For Selected Country Loans**(in percent)**

	U.S. Banks ¹	U.K. Banks ²
Argentina	70	76-89
Bolivia	90	76-89
Brazil	50	70-84
Costa Rica	60	24-37
Cote d'Ivoire	75	85-99
Ecuador	60	76-89
Peru	100	90-96
Poland	60	76-89

Notes: ¹Based on the Allocated Transfer Risk Reserves (ATRRs) mandated by U.S. regulators.

²Based on the recommended ranges given in the matrix of the Bank of England.

Source: World Bank, Quarterly Review, December 1991.

Table 4. BIS Capital Adequacy Ratios: U.S. Banks, 1991.

(in percent)

	1991 Quarter III	1991 Quarter I
Bank of New York	9.35	8.46
Bankers trust	10.90	10.34
Chase Manhattan	9.69	8.67
Chemical	9.25	9.05
Citicorp	7.28	7.50
Manufacturers Hanover	9.70	9.20
J.P. Morgan	10.80	10.30
Republic Bank of N.Y.	24.91	22.50
Bank of Boston	9.00	9.60
First Chicago	9.26	8.50
Continental	8.40	7.80
Average	10.78	10.17

Source: World Bank, Quarterly Review, September and December 1991.

Table 5. BIS Capital Adequacy Ratios: Japanese Banks, 1991.**(in percent)**

	1991 Quarter III	1991 Quarter I
Dai-Ichi Kango	8.38	8.75
Mitusi Taiyo Kobe	7.56	7.35
Sumitomo	8.94	8.87
Fuji	8.72	9.08
Mitsubishi	8.72	8.74
Sanwa	8.50	8.50
Tokai	8.34	8.05
Bank of Tokyo	8.44	8.12
Daiwa	8.90	8.92
Kyowa Saitama	9.02	8.93
Hokkaido Takushoku	8.82	8.74
Average	8.58	8.32

Source: World Bank, Quarterly Review, September and December 1991.

ANNEX: Treatment of LLRs in Major Creditor Countries¹⁴

(i) United States

U.S. banks create three types of loan loss provisions: (1) specific provisions mandated by Federal Regulators, (2) provisions routinely established by bank management against (2) specific identifiable risks, and (3) provisions established by bank management against general estimated losses.

General reserves, also known as the "allowances for loan and lease losses," represent an amount established for estimated losses inherent in the loan portfolio, usually based on past experience. Prior to BIS regulations these reserves were fully included in regulatory capital and were not taxable. Now, they are included in Tier 2 capital up to 1.25 percent of the risk-weighted assets. Specific reserves allocated against identified losses are not (and were not) included in capital and are tax deductible.

Also not included in capital (and tax deductible) are specific provisions mandated by Federal Regulators.¹⁵ Country specific provisions on international loans are determined by Interagency Country Exposure Review Committee (ICERC). ICERC requires banks to establish "allocated transfer risk reserves (ATRRs)" against those international assets that it classifies as "value impaired" based on the country's debt servicing capacity.

The ATRRs are reviewed regularly and adjustments in mandated provision levels are made. The required reserve is calculated by multiplying the percentage imposed by the ICERC by the face value amount of exposure classified as value impaired, after adjusting for guarantees. In this calculation, any previous write-downs are added back before the amount of the specific provision is determined. Generally, the reserves apply to all loans except performing trade credits and performing inter-bank lines.

(ii) Japan

In Japan the Ministry of Finance (MOF) allows Japanese banks to create three types of provisions.

(1) Specified-Overseas Receivables (SORs), normally established against sovereign risks (used to be included in regulatory capital except 1 percent of exposure and tax deductible up to 1 percent of exposure).

(2) General provisions, established against estimated losses in the overall loan portfolio (used to be included in capital and tax deductible up to 0.3 percent of loans outstanding or total loans outstanding multiplied by the average loan loss ratio for the preceeding three years).

(3) Special reserves, established for loans that have no likelihood of being paid (not included in

¹⁴ A large part of the information in these sections are from Hay and Paul (1991).

¹⁵ Provisions mandated for selected country loans are given in Table 3.

capital and tax deductible up to 50 percent of the face value of a specific loan).

Japanese banks also have substantial "hidden reserves." These reserves result from the fact that many securities are carried at historic cost on banks' books. The market value of these securities are generally substantially higher than their book values.¹⁶ The difference between book and market values of these securities are included in Tier 2 capital with a discount of 55 percent.

Reserves against developing countries (SORs) is designed for potential losses due to transfer risks arising from loans to foreign borrowers. SOR is applied to all commercial bank loans to a foreign country in which the collectibility of the assets is recognized as doubtful. The most important impact of the BIS regulations on Japanese banks is that SORs which have been included in regulatory capital ever since their introduction in 1983, are now excluded from capital.

MOF has an undisclosed list of countries against which it allows SORs. Traditionally maximum allowable SORs, which are the same for all countries in the list, were also set by the MOF. However, on March 31, 1991 MOF abolished the cap on provisioning for sovereign debts and currently the ratio can be decided by each bank. Nevertheless, since MOF has very broad powers and often issues instructions in an informal way, it still provides "advisory" rather than statutory cap. Currently major Japanese banks have reserves of 40 percent of developing country exposure.

(iii) United Kingdom

U.K. banks also establish general and specific provisions against potential loan losses. Specific provisions against value-impaired assets are normally netted against that asset on the balance sheet and are tax deductible. General loan provisions are shown as liabilities or may be separately disclosed. Prior to BIS regulations, these were included in regulatory capital and were not taxable. Provisions against country risk are specific provisions which have always been excluded from regulatory capital and are tax-deductible up to established limits.

In United Kingdom, country-specific provisions and tax deductions are established according to a "matrix" developed and implemented by the Bank of England (BOE).¹⁷ The matrix is composed of ranges for individual countries within which provisioning levels should fall. These ranges are calculated taking into account the countries' history of default and economic performance. Since 1987 the BOE has tried to ensure that banks carry at least the minimum level of provisions implied by the matrix. Although the matrix is not legally binding or officially mandatory, most U.K. commercial banks perceive the matrix as establishing a mandatory minimum of provisioning.

(iv) France

French banks are allowed to make two types of loan provisions: (1) specific provisions (2) general provisions. Specific provisions are made against individual assets whose recovery is doubtful.

¹⁶ Kane, Unal and Demirgüç-Kunt (1990) measure and analyze this hidden capital at Japanese banks.

¹⁷ Provisions recommended for selected country loans are given in Table 3.

Tax deductibility is granted under the condition that loss is probable. General loan loss provisions are tax deductible and are non-allocated financial reserves. The annual incremental provision cannot exceed 5 percent of the pre-tax income of the banking entity. In addition, in the bank's balance sheet, provisions cannot exceed 0.5 percent of total medium and long-term assets.

Banking practice relating to developing country provisioning is determined by the French Banking Commission (FBC). At the end of each fiscal year, French banking authorities survey the reserve practices of French banks and calculate the average reserve levels of banks with respect to individual countries. In 1987 banks were informed that they were required to make provisions to set their reserve levels equal to the industry average calculated at the end of the previous fiscal year. Due to their mandatory nature, the Treasury has treated these provisions as tax deductible. However, although these provisions are specific in the sense that they are calculated on a country by country basis and are tax deductible, they have been treated as general, and included in regulatory capital.

Thus before the BIS regulations, French banks were able to deduct their developing country reserves from taxes and include them in capital too. With BIS regulations taking full effect, this will no longer be true. However, at the time BIS regulations were agreed upon, French authorities negotiated an exception to the limit that general reserves can be included in Tier 2 capital up to 1.5 percent of risk weighted assets. According to this exception, this limit can be "exceptionally and temporarily " increased to 2.0 percent.

(v) Germany

German banks create three types of loan loss reserves against their loans: (1) specific reserves, (2) general reserves, and (3) hidden (undisclosed) reserves. Specific reserves are tax deductible and excluded from regulatory capital. General loan loss reserves are also excluded from regulatory capital but are, for the most part, not tax deductible.

In addition to specific and general reserves, German banks establish extensive hidden reserves. These are set up against special risks pertaining to banking and they are not disclosed except in audit reports. The use of hidden reserves allows German banks to report steady profits and can be used to smooth out any fluctuations in earnings. Hidden reserves are excluded from capital and are generally not tax deductible. Under the BIS guidelines, however, banks are allowed to include their hidden reserves in Tier 2 capital provided they are accepted by the relevant banking supervisor.

In Germany, the credit risks relating to sovereign loans are regarded as specific rather than general risk. Therefore, reserves against country risks have always been netted from these loans. There are currently no legal or regulatory guidelines detailing countries for which provisions must be set up, or the percentage write-downs which are considered necessary. The Federal Bank Supervisory Office (FBSO) has indicated that adequate provisions must be established, but it is up to each bank's management and their auditors to decide what is adequate. Most large German banks have specific reserves of around 60 percent of their exposure to developing countries.

Germany is a rare country in that the BIS capital definitions are more lenient than its domestic banking regulations that exclude general and hidden reserves from its definition of capital.

(vi) Canada

Since 1984, under the direction of supervisory guidelines, Canadian banks have been establishing provisions against their exposure to developing countries. Effective November 1987, Office of the Superintendent of Financial Institutions (OSFI) allows three types of loss provisions: (1) specific provisions, (2) provisions for doubtful credits, and (3) general country risk provisions. The provisions are excluded from regulatory capital and the specific and general country risk provisions are tax deductible generally up to 45 percent of the face value of the loan. The provisions for doubtful assets are prudential in nature and cannot be determined on an item-by-item basis, and are not tax deductible.

According to October 1990 OSFI guideline, minimum level of provisions against exposures to 44 designated countries is set at 35 percent of exposure. Prior to October 1989 there used to a maximum level of 45 percent, which is now removed. The allocation of provisions against each country is left to the discretion of the individual banks as long as on an overall basis they meet the 35 percent mandatory minimum. Canadian banks have reserves well in excess of this minimum, at around 70 percent of exposure.

As in the case of German banks, Canadian banks have been subject to a more strict definition of capital before the BIS guidelines took effect.

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